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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,345	12/17/2003	Arianna T. Morales	GP-302302	9693

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EXAMINER

COZART, JERMIE E

ART UNIT	PAPER NUMBER
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3726

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/738,345

Applicant(s)

MORALES ET AL.

Examiner

Jermie Cozart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/17/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11, drawn to a method for forming a metallic composite structure, classified in class 29, subclass 469.5.
 - II. Claims 12-18, drawn to a composite structure, classified in class 428, subclass 613.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be produced by another and materially different process such as by casting the metal foam onto the metal sheet.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Katherine Marra on 11/3/05 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The disclosure is objected to because of the following informalities: In paragraph [0009], line 6, "[In" it is objected because it is grammatically incorrect, therefore it is suggested to change "[In" to - -In- -. Appropriate correction is required.

Claim Objections

7. Claims 3, 4, and 7 are objected to because of the following informalities: In claim 3, line 2, "to" is objected is to because it is grammatically in the used context and should be deleted; In claim 7, line 3, "is" is objected to because it is grammatically incorrect in the used context and therefore should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3, 5-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwartz et al. (6,085,965) in view of Saunders et al. (5,974,847).

Schwartz discloses forming a metallic composite (40) comprising a metallic foam substrate (14) coupled to sheet metal (10) after applying gas pressure (col. 6, lines 44-51) to the form the sheet metal. The gas pressure is applied to a surface of the sheet metal (10) so as to form the sheet metal to at least partially conform with the die forming surface. The coupling of metallic foam substrate (14) to the sheet metal involves deforming the sheet metal (10) via plates (36) to form interfacial surfaces (not shown, fig. 2) which couple to a pair of surfaces of the metallic foam (14). The sheet metal and dependent metallic foam sheet (14) is placed between a die (32) and platen (34). The metallic foam substrate (14) is placed between first and second sheet metal layers (10, 12) to form a metal sandwich structure. The sheet metal is a superplastically formable alloy (i.e. aluminum), and the metallic foam is a superplastically formable alloy (i.e. aluminum). *See column 4, lines 14 – 57; column 6, lines 13 – 51; and figures 2-3 for further clarification.*

Schwartz, however, does not disclose the die and the platen configured to sealingly engage a periphery of the sheet metal for forming a die enclosed area of the sheet metal, the die having a forming surface defining a cavity between the forming surface and the metal sheet, moving the die and platen to their closed position such that the die engages the periphery of the sheet metal at the metal sheet, or adjusting the temperature of the sheet metal to the material blow forming temperature.

Saunders discloses a die (36) and the platen (32) configured to sealingly engage a periphery of the sheet metal (60) for forming a die enclosed area of the sheet metal, the die (36) having a forming surface defining a cavity between the forming surface and

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the metal sheet, moving the die (36) and platen (32) to their closed position such that the die (36) engages the periphery of the sheet metal (60) at the metal sheet, and adjusting the temperature of the sheet metal to the material blow forming temperature.

See column 3, line 40 – column 4, line 55, and figures 2A-2C for further clarification.

Therefore, it would have been obvious to substitute the die and platen of Schwartz with a die and platen configured to plate configured to sealingly engage a periphery of the sheet metal for forming a die enclosed area of the sheet metal, wherein the die has a forming surface defining a cavity between the forming surface and the metal sheet, to move the die and platen to their closed position such that the die engages the periphery of the sheet metal at the metal sheet, and to adjust the temperature of the sheet metal to the material blow forming temperature, in light of the teachings of Saunders, in order to effectively form a ductile metal sheet into a complex shape without excessive thinning of the sheet.

Regarding **claim 2**, Schwartz/Saunders discloses all of the claimed subject matter except for coupling the metallic foam substrate to the sheet metal occurs prior to applying gas pressure to form the sheet metal.

It would have been an obvious matter of design choice to couple the metallic foam substrate to the sheet metal prior to applying gas pressure to form the sheet metal, since Applicant has not disclosed that coupling the metallic foam substrate to the sheet metal prior to applying gas pressure to form the sheet metal solves any stated problem or is for any particular purpose and it appears that the invention would perform

equally well with coupling the metallic foam substrate to the sheet metal after applying gas pressure to form the sheet metal as taught by Schwartz/Saunders.

Regarding **claim 11**, Schwartz/Saunders discloses the claimed subject matter except for the high purity aluminum alloy reinforced with a low volume fraction of (~1 micron) ceramic particles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to reinforce the high purity aluminum with a low volume fraction of (~1 micron) ceramic particles, since it has been held to be known within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*.

10. Claims 1-4 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niebylski (3,834,881) in view of Saunders et al. (5,974,847).

Niebylski discloses forming a metallic composite structure (1, 2), comprising a metallic foam substrate (1) coupled to formed sheet metal (2). Niebylski applies an adhesive (col. 3, lines 25-28) between the metallic foam (1) and the sheet metal (2). The sheet metal is a superplastically formable alloy (i.e. aluminum), and the metallic foam is a superplastically formable alloy (i.e. aluminum). Niebylski also discloses brazing (col. 3, lines 35-37) the foam (1) to the sheet metal (2). *See column 2, line 44 – column 3, line 37, and figure 1 for further clarification.*

Niebylski, however, does not disclose the following: placing sheet metal between a die and a platen, the die and the platen being configured to sealingly engage a periphery of the sheet metal for forming a die enclosed area of the sheet metal, the die

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having a forming surface defining a cavity between the forming surface and the metal sheet; moving the die and platen to their closed position such that the die engages the periphery of the sheet metal at the metal sheet; adjusting the temperature of the sheet metal to the material blow forming temperature; applying gas pressure to a surface of the sheet metal so as to form the sheet metal to at least partially conform with the die forming surface; coupling the metallic foam substrate to the sheet metal after applying gas pressure to form the sheet metal.

Saunders discloses placing a sheet metal (60) between a die (36) and a platen (32), wherein the die and the platen are configured to sealingly engage a periphery of the sheet metal for forming a die enclosed area of the sheet metal. The die (36) has a forming surface defining a cavity between the forming surface and the metal sheet (60). The die (36) and platen (32) are moved to their closed position such that the die (36) engages the periphery of the sheet metal (60) at the metal sheet. The temperature of the sheet metal (60) is adjusted to the material blow forming temperature, and gas pressure is applied to a surface of the sheet metal (60) so as to form the sheet metal to at least partially conform with the die forming surface. *See column 3, line 40 – column 4, line 55, and figures 2A-2C for further clarification.*

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention perform the following: to place sheet metal of Niebylski between a die and a platen, such that the die and the platen are configured to sealingly engage a periphery of the sheet metal for forming a die enclosed area of the sheet metal, wherein the die has a forming surface defining a cavity between the forming surface and the

metal sheet, to move the die and platen to their closed position such that the die engages the periphery of the sheet metal at the metal sheet, to adjust the temperature of the sheet metal of Niebylski to the material blow forming temperature, to apply gas pressure to a surface of the sheet metal so as to form the sheet metal to at least partially conform with the die forming surface, in light of the teachings of Saunders, in order to effectively form a ductile metal sheet into a complex shape without excessive thinning of the sheet.

Regarding claim 2, Niebylski/Saunders discloses all of the claimed subject matter except for coupling the metallic foam substrate to the sheet metal occurs prior to applying gas pressure to form the sheet metal.

It would have been an obvious matter of design choice to couple the metallic foam substrate to the sheet metal prior to applying gas pressure to form the sheet metal, since Applicant has not disclosed that coupling the metallic foam substrate to the sheet metal prior to applying gas pressure to form the sheet metal solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with coupling the metallic foam substrate to the sheet metal after applying gas pressure to form the sheet metal as taught by Niebylski/Saunders.

Regarding claim 11, Niebylski/Saunders discloses the claimed subject matter except for the high purity aluminum alloy reinforced with a low volume fraction of (~1 micron) ceramic particles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to reinforce the high purity aluminum with a low volume fraction of


(~1 micron) ceramic particles, since it has been held to be known within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references cited on the attached PTO-892 are cited to show the formation of composite panels.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermie Cozart whose telephone number is 571-272-4528. The examiner can normally be reached on Monday-Thursday, 7:30 am - 6:00 pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jermie Cozart
Examiner
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